

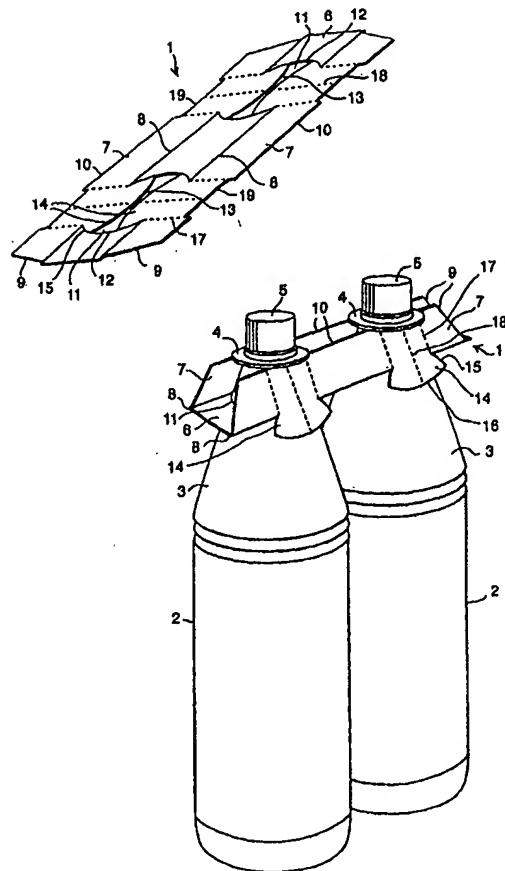
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: CARRIER FOR BOTTLES, METHOD OF APPLYING SUCH CARRIERS AND APPARATUS FOR CARRYING OUT SUCH METHOD

## (57) Abstract

The present invention relates to a carrier (1), which comprises a plane blank (2) designed for several bottles (2) having a neck flange (4). The carrier has a central field (6) with openings (11) and a lateral field (7), connected to each longitudinal side of the central field via a folding indication (8). Into the openings (11) guide flaps (14) project, the lateral fields (7) and the guide flaps forming stiff units, which are designed to, when the carrier is in its use position, project downwards from the central field. The lateral fields (7) can be folded upwards to abut against the lower surfaces of the flanges (4) in order to carry the bottles. According to the invention the carrier is designed to, after a pre-forming to the use-position, be applied from above on a row of bottles (2) having a conical neck portion (3), the central field (6) has openings (11) for only one bottle row, said guide flaps (14) on the plane carrier blank project into each opening (11) and from each lateral field (7) at mutually opposite sides, which guide flaps are pressed outwards and by the from below penetrated bottle top respectively and are the lateral fields in this way retained in a self-locking carrying position, and from the ends of the punching lines (12) of the openings and between them, transversally through the lateral fields (7) folding indications (17) extend to the longitudinal side (10) of the lateral fields. Also, the invention relates to a method to apply such carriers on bottles as well as a device designed to carry out this method.



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CARRIER FOR BOTTLES, METHOD OF APPLYING SUCH CARRIERS AND  
APPARATUS FOR CARRYING OUT SUCH METHOD

The present invention relates to a carrier designed for several  
5 bottles or the like and set forth in more detail in the preamble  
of claim 1. The invention also relates to a method of applying  
such a carrier on bottles or the like according to the preamble  
of the first method claim as well as a device designed to carry  
out said method according to the first device claim.

10 The particular object of the invention is to develop a carrier  
designed for sets of two or more so called pull-out bottles.

Carriers or rather packing devices according to the preamble of  
15 claim 1 are already known by EP-A1 0 317 379. However, such  
devices, filled with merchandise, are at least not suitable for  
one-hand carrying, and the merchandise is supported and carried  
respectively only on one side, which of course is a substantial  
drawback and means, that heavy objects, e.g. magnum bottles or  
20 the like, can not be considered at all. Thus, this device is  
designed for light-weight objects, namely yoghurt cups and the  
like, which are to be inserted into the plane device from above,  
the lateral fields and the guide flaps connected to these fields  
being folded upwards and downwards respectively. The lateral  
25 fields have no special means designed to improve the shape  
adjustment to the carried objects and no means, which enhances  
the security during carrying.

Other carriers are already known according to FR-A-1 552 369 and  
30 EP-A-0 271 895. In these two cases plane cardboard blanks are  
used, provided with inner punching cuts and cuts in connection  
with holes, designed for a lead-through of bottle tops having  
capsules, caps or the like. Flaps are obtained by means of the  
punching cuts and are folded upwards in order to abut with their  
35 free end edges against the lower sides of said capsules or the  
like, in order to support a set of bottles. In addition to said  
flaps there are provided for such a set through, lateral,  
upwardly and downwardly respectively folded lists, designed to  
make the carrier stiffer.

40 The lists according to the French document are kept in place only

by a manual pressure, directed against the bottle tops and the area below the capsules, but the lists also have a carrying function, which however can be easily annulled e.g. by the fact, that the lists are resilient outwards due to an inherent material  
5 elasticity.

The lists according to said European document are kept in place by shoulders, which are upwardly projecting extensions, which horizontally or laterally abut against said bottle cap but have  
10 no carrying function. Since the lists are directed downwards and also enclose the bottle body itself having a larger diameter than the neck, it is difficult to seize such a carrier, at least when the bottles are large, the hand and the fingers respectively  
15 having to hold a much larger carrier, there also being a risk, that the carrier is deformed and loses some of its carrying capacity.

Also, a certain problem with already known carriers of this type and with the methods and the devices used to apply the carriers  
20 respectively is the fact, that the carriers are supposed to, in a secure and reliable way, be able to hold and be applied on respectively bottles of different sizes and/or designed in various ways. One phenomenon in this connection is the fact, that returnable bottles can be mixed with new bottles, which  
25 returnable bottles after several washing processes have shrunk considerably.

The object of the present invention is to counteract and, as far as possible, eliminate the above-mentioned drawbacks. Also, one  
30 object of the invention is to develop the state of the art in this technical field in various respects. A special object is to suggest a carrier, which functions in a reliable way, in which carrier no parts can be detached without intention. The carrier is designed to be able to carry maximal loads and be easy to  
35 seize. Also, the carrier is to be amenable to sheet designs, i.e. a sheet is to include a plurality of carriers and this sheet is to, in one step, be applied on a plurality of bottle rows, placed in one or several bags, trays, boxes or the like. Also, in this connection a change to varying bottle row formations is to be  
40 feasible in a relatively easy, fast and economic manner.

These objects are attained according to the present invention by designing a carrier of the type described in the introduction mainly in such a way as is set forth in the characterizing clause of claim 1. Also, said objects are attained by designing a method  
5 and a device respectively of the types described in the introduction, mainly in the ways set forth in the characterizing clauses of the corresponding method claim and device claim respectively.

10 Additional characterizing features and advantages of the present invention are set forth in the following description, reference being made to the enclosed drawings, which show a preferred but not limiting embodiment of the invention. The drawings show in detail in:

15 Fig. 1 a perspective view from above of a first embodiment of an already punched plane carrier blank;

Fig. 2 a perspective view of the blank mainly according to Fig. 1, partially in an upwardly folded condition;

20 Fig. 3 a perspective view of the carrier according to Fig. 2, applied on two bottles in its use position;

Figs. 4 and 5 planar views of a second and a third respectively embodiment of an already punched plane carrier blank;

25 Figs. 6 and 7 planar views from above of carrier blanks, arranged in sheet form in various mutual formations and designed according to any of the figures above; and

30 Figs. 8-12 side views from two different directions of an automatic equipment designed to apply carriers and carriers, which are connected to each other in a sheet design, respectively, on top of bottle row formations in successive steps.

In the drawings a carrier 1 and a carrier blank 1 respectively are shown. The carrier is designed to carry at least two bottles or the like 2, preferably bottles having a neck portion 3, which  
35 converges upwards mainly conically and which preferably is limited upwards by a flange 4, above which the bottle is closed by means of a screw cap or the like 5.

Carrier 1 has three longitudinal fields 6 and 7, which preferably  
40 have roughly the same width, namely a central field 6 and a

lateral field 7, connected to each one of the longitudinal sides of the central field 6. The carrier is suitably made of corrugated cardboard, the corrugations of the corrugated board extending perpendicularly to said fields. Fields 6 and 7 are  
5 separated from each other by grooves, perforations or other types of folding indications 8. Narrow sides 9 of lateral fields 7 are suitably somewhat backwardly inclined in relation to free longitudinal side 10 of the lateral fields, i.e. forms an angle with the latter, which is larger than  $90^\circ$ , e.g. about  $120^\circ$ , to  
10 avoid sharp corners within this area. However, said grooves or the like 8 are not continuous but are interrupted within the area of each opening 11, which is arranged in central field 6 to allow a bottle top to be lead through, namely in the shown embodiment cap 5, flange 4 and the uppermost portion of neck portion 3. Each  
15 opening 11 is obtained by means of two punching lines 12, which are situated along a circular line in central field 6 or follow other curves and which leave empty a central longitudinal area in the central field, in which a roughly X-shaped portion 13, which is similar to a diametrical section through a biconcave  
20 lense, is completely punched out.

On each side of the completely detached punching cuts these laterally delimit a guide flap 14, which consequently has convex lateral edges 15 up to and all the way from each folding  
25 indication 8 respectively and which has a convex free end edge 16. The latter convexity or the like implies, that the guide flaps abut with a maximal length against the top of the bottle cone in this area, by means of which an even safer and stronger retention of the bottles according to the following description  
30 is achieved. Guide flaps 14 are positioned in the same plane as the respective lateral fields 7 and follow its movements and vice versa, since these portions form a rigid unit.

According to a preferred embodiment folding indications 17 can  
35 start out from the ends of the punching lines right across, i.e. at right angles, in relation to and through lateral fields 7, in the form as e.g. perforations and such a folding indication 18 can also extend in a parallel direction between indications 17 from the middle or the top of end edge 16 to longitudinal side  
40 10 of the lateral fields or up to the corners of an e.g.

flattened U-shaped recess 19, the edges of which are formed by imaginary extensions of the folding indications 17. These recesses are designed to receive some portion of the bottle top, e.g. flange 4 or the lowermost portion of cap 5. Folding indications 8, 17, 18 are suitably arranged solely on and in respectively the main surface of the carrier, which forms its upper and inner side respectively after the application.

Such a carrier is used in the following manner: Fig. 1 shows a carrier blank, which has already been punched and is completely flat and therefore is easy to pile up, transport and use in a semi or fully automatic application line. In such a carrier lateral fields 7 are folded upwards along folding indications 8 according to Fig. 2, but the guide flaps are turned downwards out of holes 8. This can be quickly and easily done in an application line, the central field being pressed downwards and the lateral fields being moved upwards and inwards towards each other, e.g. until the free longitudinal edges of the lateral fields are close to each other and the lateral fields form an angle with the central field, which is e.g. 50-80°, preferably 70°, in which position the guide flaps on either side of each hole diverge upwards, so that a bottle top can be lead through the respective hole without being hindered by the guide flaps. However, at the end of the lead-through phase a remarkable automatic self-locking will be achieved, since the flange or possibly the cap will abut against those sides of the lateral fields, which face each other and the central field respectively, the lateral fields being slightly bent outwards, until the flange and the cap respectively have passed by the free longitudinal edges of the lateral fields and can be positioned on top of the same and in said recesses respectively. To accomplish this the inherent material elasticity is utilized, since the lateral fields cannot simply be swung outwards again, when the guide flaps abut against the bottle neck portion, which diverges downwards, and consequently tend to press back the lateral fields to a position below the flange or the cap, while said bottle neck portion keep the guide flaps divergent outwards, which is shown in Fig. 3. In connection with these movements and said utilization of the material elasticity or caused by a special previous operation a smaller folding about lines 17 and 18 can also be done, i.e. a slight deformation of

the lateral fields and the guide flaps, which follow the bottle top contour, which allows the guide flaps to be swung somewhat further outwards and the lateral fields somewhat further inwards.

- 5 Thus, the carrier position according to Fig. 3 is self-locking and no particular means are required in order to lock the carrier on a set of bottles.

10 The carriers 1 as shown in Figs. 4 and 5 mainly correspond to the embodiments shown in Figs. 1-3. Folding indications 8, 17 and 18 in Figs. 4 and 5 have been depicted as flat and wide grooves, which partially can have punching cuts 22, which penetrate the entire thickness of the blank, in order to additionally facilitate the folding. Folding indications 17 can extend, 15 possibly in a step-wise manner, across the width of the carrier and openings 11 as well as the free edges of guide flaps 14 can be laterally delimited by concave punching cuts 12 and 15 respectively in order to form auxiliary flaps 21, which extend along the width of the entire central field 6. Auxiliary flaps 20 21 allow a narrower central field, while openings 11 can be moved a longer distance over a bottle top, which e.g. is higher and situated adjacent a bottle top, which is lower, e.g. due to repeated washings. Since the carrier must be pressed downwards a larger distance on the lower bottle top, at the same time a 25 cone cross-section, the area of which is larger, of the higher bottle top is utilized. To accomplish this, or principally in order to meet the requirements irrespectively of the bottle height, the auxiliary flaps can be bent upwards and abut with their inherent elasticity resiliently against the outer side of 30 the bottle top. In Figs. 4 and 5 it is shown, that in the one end portion of central field 6 a recess 23 at the end has been made, which also is shown in Fig. 6, and which reduces the material width in this area and consequently facilitates a separation or which only constitutes e.g. the one half of a guide opening. In 35 Fig. 5 an oblong opening 24 is shown, which is situated in the central portion of the central field, suitably in the longitudinal direction of the carrier. Openings 25 are according to Fig. 4 arranged in the free ends of guide flaps 14 and supplement each other to circular shape or the like. These 40 openings 23-25 can be designed to, temporarily during the



preliminary folding and the application respectively, hold guide pins, which are shown in Figs. 8-12.

Auxiliary flaps 21 lead due to their shape simultaneously to  
5 concave lateral edges 15 on guide flaps 14, so that a larger  
space for the central portion of the carrier is obtained, which  
is used as a handle for seizing with one hand. Simultaneously a  
recess 19, which is central in relation to the longitudinal  
10 direction, facilitates a gripping also for small hands with less  
penetration of the free carrier edges into the hand as a result.  
Projections 20 result on the other hand, in that the free ends  
of guide flaps 14 extend further downwards on the conical bottle  
top, which of course constantly increases its protruding  
15 downwards. This results in a even safer and longer penetration  
of the free edges 10 of the lateral fields and projections 20  
respectively below flanges 4, the carrying security being  
enhanced. Thanks to these features and a relatively narrow  
central field 6 in connection with this the lateral fields are  
20 pressed strongly from the outside against the conical bottle top,  
which due to its rounding presses the lateral fields outwards,  
which have to yield somewhat by being folded somewhat around  
folding indications 17 and 18, which thus become somewhat rounded  
jointly with the guide flaps, which in this way can creep even  
further into a position around the bottle top below the flaps and  
25 additionally guarantee the bond and the carrying security.

The above-mentioned rounding of the guide flaps also results in  
a small shortening of the length of the carriers, which  
intentionally can be used as an instrument designed to guarantee  
30 the separation of individual carriers being parts of a sheet 26  
and 27 respectively according to Figs. 6 and 7. The holding  
together of the individual carriers in such a sheet is  
accomplished by small non-punched bridges between adjacent  
carriers, which are separated from each other later on in  
35 connection with the application.

It is shown in Figs. 6 and 7, that it is possible to arrange the  
individual carriers in a sheet in practically arbitrary  
formations, e.g. corresponding to the bottle row formation in a  
40 tray, a box or the like. This substantial advantage with

variation possibilities is also a result of the design of the automatic equipment described below, for pre-folding and application.

5 This automatic equipment is shown schematically and in an exemplifying way, designed for application of sheets of carriers for two bottles, one for each bottle, in Figs, 8-12 and is designated in its entirety with numerals 28. It comprises a lower mold 29, which suitably comprises several partial molds, which  
10 each is designed to receive a carrier blank. Each partial mold comprises in this case a W-shaped body 30 with a central support 31 and supports 32 at its ends. The former have a hole 33 for a temporary support for a guide pin 34, whereas the latter have a hole 35 for a temporary support of a knife 36. All the supports  
15 are designed to support central field 6 of the carriers and they have lateral edges in the form of equally long support flanges 37, which protrude one or two centimeters in a practical embodiment above the supports. The upper inner edges of the support flanges can be bevelled inwards in order to facilitate  
20 the accompanying of the lateral fields around the support flanges, i.e. the plane during the transition from Fig. 8 to Fig 9 see the a)-portions. The web between the supports suitably has central, vertical through bores (not shown) in order to fasten the partial molds on a mounting plate (not shown) in the desired  
25 formation.

Above the supports, multiple function devices 38 and 39 are alternately arranged, which are vertically movable upwards and downwards. The devices 38 are designed to press, fold and grip,  
30 whereas the devices 39 are designed to press, possibly fold and separate. All the devices suitably are suspended from tube-shaped shafts 40, which with a central section are moved with sliding fit through a lower base plate 41, positioned above the devices, and the upper end of which is threaded into an upper base plate  
35 43. In the shafts, there are guided guide rods 42 projecting from said shafts both upwardly and downwardly. The upper ends of said rods are provided with stop devices 46. Between these and the base plate 43 the guide rods suitably are surrounded by a compression spring (not shown), by means of which the height  
40 position of the lower end of the guide rod can be adjusted and/or

a soft braking can be done, when the devices are lowered. The base plate 43 is connected to the base plate 41 by means of preferably pneumatic cylinders 44, which are controlled by a control center (not shown).

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Said devices 39 are, like the devices 38, provided with press cushions 45, which are fastened to the lower ends of the guide rods e.g. by screwing and are provided to be pressed against the central field portions situated at the ends. Each cushion is also provided with a transversely arranged knife 36 and is designed to influence the ends of the two central fields, adjacent to each other and belonging to two carriers simultaneously, with its ends abutting each other. Of course, it is possible to arrange guide devices also within the area of the knives or even as knives designed as guide devices, which however normally is not necessary.

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The upper longitudinal edges of cushions 45 are bevels 47, against which folding flaps 48 abut with their lower ends, which flaps are pivotally suspended from the lower end of the body 49 of the carriers, pivoting axels 50 extending in the longitudinal direction of the carriers. The lower inner longitudinal edges of the flaps can also abut, with a certain bevelling, against bevels 47 in order to secure the swinging outwards of the flaps. The contact of the folding flaps against the press cushion can be secured by means of pressure devices (not shown), acting in opposite directions, e.g. compression springs or the like. Above the press cushion 45 a body 49 is provided with a contact surface 51 for the press cushion.

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Within the upper area of body 49 there are grip claws 53, which are suspended on both sides from pivoting axels 52, which extend in the longitudinal direction of the carrier and are influenced by springs in order to be forced outwards with their lower ends, which are at least somewhat bended in directions against each other. Inside the pivoting axels 52 a control block 54 is mounted at the lower end of the tube shaft, situated roughly in the center of the body, vertically seen, which block, when the shaft is lifted to an upper end position, will pivot the upper ends of the grip claws upwards, so that the lower ends of the grip claws

will be moved towards each other and abut against the outer side of the folding flaps. To achieve this control block 54 is, within its upper laterally disposed area, provided with downwardly and upwardly inclined bevels 55.

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Such a device works with reference to particularly Figs. 8-12 in the following manner: In Fig. 8 a carrier blank and a sheet 26 respectively, particularly according to Fig. 6, has been positioned on an array and combination of lower molds 29, which  
10 correspond to the number of individual blanks. At the same time as one or several devices respectively, 38 and 39 respectively, have been lowered in order to, with their respective cushions, loosely abut against the plane blank and sheet respectively, guide pin 34 of devices 38 has penetrated opening 23, 24 and 25  
15 respectively, whereas knives 36 of devices 39 have cut through the connections between carrier blanks, which are situated adjacent to each other in the longitudinal direction. The folding flaps are folded inwards and the cushions are situated at a distance from the contact surface 51 of the body 49. The grip  
20 claws are kept stretched out with their lower ends.

In the position shown in Fig. 9 cushions 45 have been pressed downwards on supports 31 and 32 and simultaneously folding flaps 48 have been opened up, which has already been indicated by  
25 arrows in Fig. 8. This opening up is caused by obliterating the distance between the cushions and contact surfaces 51, which occurs due to the relative displacement between the shafts and the guide rods. In this case all the upper portion of the device is lowered, said relative displacement first of all being  
30 accomplished thereby. The cushions with the opened up folding flaps are then, by continued lowering of said upper device portion, pressed downwards between support flanges 37, the free outer/lower longitudinal edges of the folding flaps influencing the folding indications, e.g. penetrating into possibly existing  
35 slots, grooves or the like, and making certain, that the folding is done exactly in the folding indications and not beside them. When this folding is initiated, also all connections between adjacent carriers in a sheet in the transversal direction are broken. In this regard, already at the punching of the sheet,  
40 longitudinal cuts have been punched out, which are disrupted

solely by narrow bridges, which it is easy to break. In the position shown in Fig. 9 the entire central field 6 is kept pressed against the supports 31 and 32, whereas the lateral fields abut against the inner side of the support flanges. Guide flaps 14 have been swung downwards and outwards, at the same time as the lateral fields have been folded upwards, and are now positioned in the recesses between the adjacent supports 31 and 32. The relative displacement between the shafts and the guide rods is shown in the upper portion of Fig. 9.

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In the position shown in Fig. 10 cylinders 44 have pressed upper base plate 43 upwards, whereas the lower base plate 41 remains in its position. This displacement upwards pulls the shafts 40 with control blocks 54 beyond pivoting axels 50 and to the same height as the upper ends of the grip claws 53, which are pressed outwards, the lower claw ends being swung towards each other, hitting the upper portions of the upwardly folded fields 7 and pivoting them with an additional folding about their folding incidations in order to finally grab lateral fields 7 onto the outer side of folding flaps 48. In this phase, shown in Fig. 10, the lateral fields are folded in a trapezoid-like way towards each other and the guide flaps also in a trapezoid-like way but away from each other. Since the support flanges only are located along the length of the supports, the guide flaps can project between the supports, which is shown in Fig. 10 a.

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Now either the lower or the upper mold portion can be removed, and then a bottle row formation, which corresponds to a carrier constellation, can be placed below the upper device portion with the clamped up carriers, which subsequently are lowered and applied to the bottles according to Figs. 11 and 12 and in the way already described, and then new carriers are positioned on the molds and a new cycle can be initiated. After the carrier application cylinders 44 are activated again in order to move the two base plates together to a position shown in Fig. 8, the control block being moved downwards in relation to the body and pivoting axels 50, so that the grip claws are allowed to swing outwards, influenced by said spring device and guide rod 42 and cushion 45 again are removed from contact surface 51.

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In this shown and described embodiment devices 39 are mounted only outside guide flaps 14, e.g. above the central portion of a central field 6 according to Fig. 4, so that these devices do not obstruct the application on bottles, whereas devices 38 are mounted above the end portions of the central fields, which latter devices press these end portions beyond flanges 4 to fold adjacent auxiliary flaps, without any not desirable folding being done. Since the devices 38 and 39 are suspended and consequently stepless pivotable around the tube-shaped shafts, a change in the position orientation in relation to the base plates can easily and quickly be obtained. Also, in these devices a plurality of alternative bore arrays for the shafts can be arranged, which match various formations, e.g. for a sheet 26 or 27.

The present invention is not limited to the embodiments described above and shown in the enclosed drawings but can be modified and supplemented in an arbitrary manner within the scope of the inventive idea and according to the following claims.

CLAIMS

1. A carrier (1) which comprises a plane blank of cardboard or the like and is designed for several bottles or the like (2), which at their top are limited by a flange (4), above which the bottles are closed by means of a screw cap or the like (5), which carrier has three longitudinal fields (6, 7), namely a central field (6) and a lateral field (7), connected to each longitudinal side of said central field via a folding indication (8), the central field (6) having openings (11), formed by punching lines (12), designed for a lead-through of portions of the bottles or the like (3-5), in which openings (11) guide flaps (14) project and remain respectively during the punching and are connected to the lateral fields (7) and the stiff units, which are obtained from the lateral fields and the guide flaps, within the area of which said punching lines (12) are interrupted and which are designed, in the use position of the carrier, to project downwards from the central field and the lateral fields (7) being designed to be folded upwards in order to abut against the lower sides of the radially projecting flanges (4), in order to support the bottles or the like (2), characterized in that the carrier is designed, subsequent to a pre-folding to roughly the desired use position, to be applied from above on only one row of bottles (2) having an upwardly mainly conically converging neck portion (3), in that the central field (6) has openings (11) for only one bottle row, in that the plane carrier blank in every opening (11) and from each lateral field (7) on mutually diametrically opposite sides said guide flaps (14) project, which are designed to be pressed outwards and remain respectively in their outwardly pressed position by the bottle top, which has penetrated from below with its cap, flange and conical neck portion (3) and in this way keep the lateral fields in a self-locking carrying position, and in that from the ends of punching lines (12) transversal preferably perpendicular in relation to and through the lateral fields (7) extending fold indications (17) project in the form of e.g. perforations, and also parallelly between said folding indications (17) from the center or the top of the end edge (16) up to at least roughly the longitudinal side (10) of the lateral fields such a folding indication (18) extends.

2. A carrier according to claim 1, c h a r a c t e r i z e d in that said three fields (6, 7) roughly have the same width and/or in that the carrier (1) is made of cardboard, the cardboard  
5 corrugations extending in a transversal direction in relation to the longitudinal extension of the fields and/or in that the narrow sides (9) of the lateral fields are slightly inclined backwards up to the free longitudinal side (10) of the lateral fields, i.e. enclose with the same an angle, which is larger than  
10 90°, e.g. roughly 120°, in order to avoid sharp corners within this area.

3. A carrier according to claim 1, c h a r a c t e r i z e d in that each opening (11) is formed by two, along a circular line  
15 or other curves, in the central field (6) situated punching lines (12), which leave a central oblong area free, in which a roughly X-shaped portion (13), similar to a diametrical section through a biconcave lens, has been punched away completely, and/or in that on each side of the completely freed punching cuts they are  
20 laterally limited by a guide flap (14) with convex lateral edges (15) up to and all the way from respectively each folding indication (8) and/or with a convex free end edge (16).

4. A carrier according to claim 1, c h a r a c t e r i z e d in  
25 that in the longitudinal side (10) of the lateral fields shallow U-shaped recesses (19) are cut away, which are designed to hold the flanges (4) and/or be situated outside them and/or in that above the longitudinal side (10) projections (20) extend outwards, designed to, possibly with very shallow recesses, hold  
30 the flanges (4).

5. A carrier according to claim 1, c h a r a c t e r i z e d in that said folding indications (8, 17, 18) are designed as shallow, wide grooves, which partially have punching cuts (22),  
35 which extend in a transversal direction to the thickness of the blank in order to further facilitate the folding and/or in that the transversal folding indications (17) extend continuously or stepwise along the width of the carrier blank and/or the openings (11) as well as the free edges of the guide flaps (14) are  
40 laterally limited by concave punching cuts (12 and 15



respectively) in order to obtain auxiliary flaps (21), which extend along the entire width of the central field (6) and which allow a narrower central field, while the openings (11) can be moved a longer distance over an e.g. higher bottle top and which are bendable upwards in order to adhere with their inherent elasticity resiliently on the outer side of the bottle top and/or in the one end portion of the central field (6) a, at the end situated, recess (23) is cut out in order to reduce the material width in this area and consequently facilitate a separation or to constitute e.g. the one half of the guide opening and/or in that in the central portion of the central field a preferably oblong (in the longitudinal direction of the carrier) guide opening (24) is situated and/or in that openings (25) are arranged in the free ends of guide flaps (14), which supplement each other to a circular form or the like, which openings (23-25) are designed to be temporarily used as guide means during the pre-folding and the application respectively and/or in that the auxiliary flaps (21) form concave lateral edges (15) of the guide flaps (14) in order to obtain a larger space for the central portion of the carrier, which constitutes a handle to be seized by one hand, and/or in that a recess (19) is used, which is central, seen in the longitudinal direction, in order to facilitate the gripping of the applied carrier, and/or in that the projections (20) are designed to allow the free ends of the guide flaps (14) to extend further downwards on a conical bottle top and to an even securer and longer penetration of the free edges (10) of the lateral fields and the projections (20) below the flanges (4) respectively and an increase in the carrying security as well as a strong pressing of the lateral fields from outside against the conical bottle top, which due to its rounding is designed to press the lateral fields outwards, which are designed to yield somewhat, since they are folded somewhat along the folding indications (17, 18), which are designed to be used jointly with the guide flaps, which in this way are designed to creep even further inwards around the bottle top below the flange and guarantee the joint and the carrying security even more, also a small shortening of the length of the carrier being obtained in this way, possibly in order to secure the separation of individual carriers, which are united to each other in a sheet (26 and 27 respectively).

6. A method of applying a carrier (1) according to claim 1 on bottles, which carrier comprises a plane cardboard blank or the like and is designed for several bottles (2), which at the top are limited by a flange (4), above which the bottles are closed by a screw cap or the like (5), and which carrier has three longitudinal fields (6, 7), namely a central field (6) and a lateral field (7), connected to each longitudinal side of the central field via a folding indication (8), the central field (6) having openings (11), formed by punching lines (12), for a lead-through of portions of the bottles (3-5), in which openings (11) guide flaps (14) project into and remain respectively during the punching, the lateral fields ((7) being connected to and with these stiff units forming the guide flaps (14), within the area of which said punching lines (12) are interrupted, and which are allowed, in the use position of the carrier, to project downwards from the central field, whereas the lateral fields (7) are folded upwards in order to abut below the radially projecting flanges (4) in order to support the bottles (2),

c h a r a c t e r i z e d in that a carrier is used, in which the central field (6) has openings (11) for only one bottle row, into which, in the plane carrier blank, in each opening (11) and from each lateral field (7), at mutually diametrically opposite sides said guide flaps (14) project, which are pressed outwards and retained respectively in their upwardly pressed position by the bottle top, which has penetrated from below, with its cap, flange and neck portion (3) in order to keep the lateral fields in a self-locking carrying position and in which the ends of the punching lines (12) in a transversal direction, preferably perpendicularly, relatively and through the lateral fields (7) folding indications (17) project in the form av e.g. perforations and such a folding indication (18) also extends paarallel between said folding indications (17) from the center or the top of the end edge (16) up to at least substantially the longitudinal side (10) of the lateral fields, and in that the carrier is pre-folded to roughly the desired use position and is applied from above on only one row of bottles (2) having an upwardly substantially conically converging neck portion (3).

7. A device designed to carry out the method according to claim 6 in order to apply one or several carriers (1), which comprises

a plane cardboard blank or the like and are designed for several bottles or the like (2), which at the top are limited by a flange (4), above which the bottles are closed by a screw cap or the like (5), which carrier has three longitudinal fields (6, 7), namely a central field (6) and a lateral field ((7)), which is connected to each longitudinal side of the central field via a folding indication (8), the central field (6) having openings (11), formed by punching lines (12) in order to lead through portions of the bottles or the like (3-5), into which openings (11) guide flaps (14) project and are retained respectively during the punching with the lateral fields (7) connected to and with the guide flaps forming stiff units, within the area of which said punching lines (12) are interrupted and which are, in the use position of the carrier, designed to project downwardly from the central field and the lateral fields (7) being designed to be folded upwards in order to abut the lower side of the radially projecting flanges (4) in order to support the bottles or the like (2), characterized in that the device has means designed for a pre-folding of the carrier and the carriers respectively, with openings (11) for only one bottle row in the central field (6) to roughly the desired use position, as well as an application of each carrier from above on a row of bottles (2) having an upwardly roughly conically converging neck portion (3), in that said means are, in the plane carrier blank, designed to influence said guide flaps (14), which project into each opening (11) and from each lateral field (7) at mutually diametrically opposite sides, and which are designed to be pressed outwards and be retained respectively in their outwardly pressed position by the bottle top, which has penetrated from below, and its cap, flange and conical neck portion (3) and in this way keep the lateral fields in a self-locking carrying position, and in that said means are, in the application phase, jointly with the bottle tops (3-5), designed to activate the folding indications (17) which extend from the ends of the punching lines (12) in a transversal direction through the lateral fields (7), in the form of e.g. perforations in order to allow them to follow the contours of the bottle tops, preferably also in order to reduce the length of the carrier and in this way bring about a mutual distancing between individual carriers, which are united to each other in a sheet.

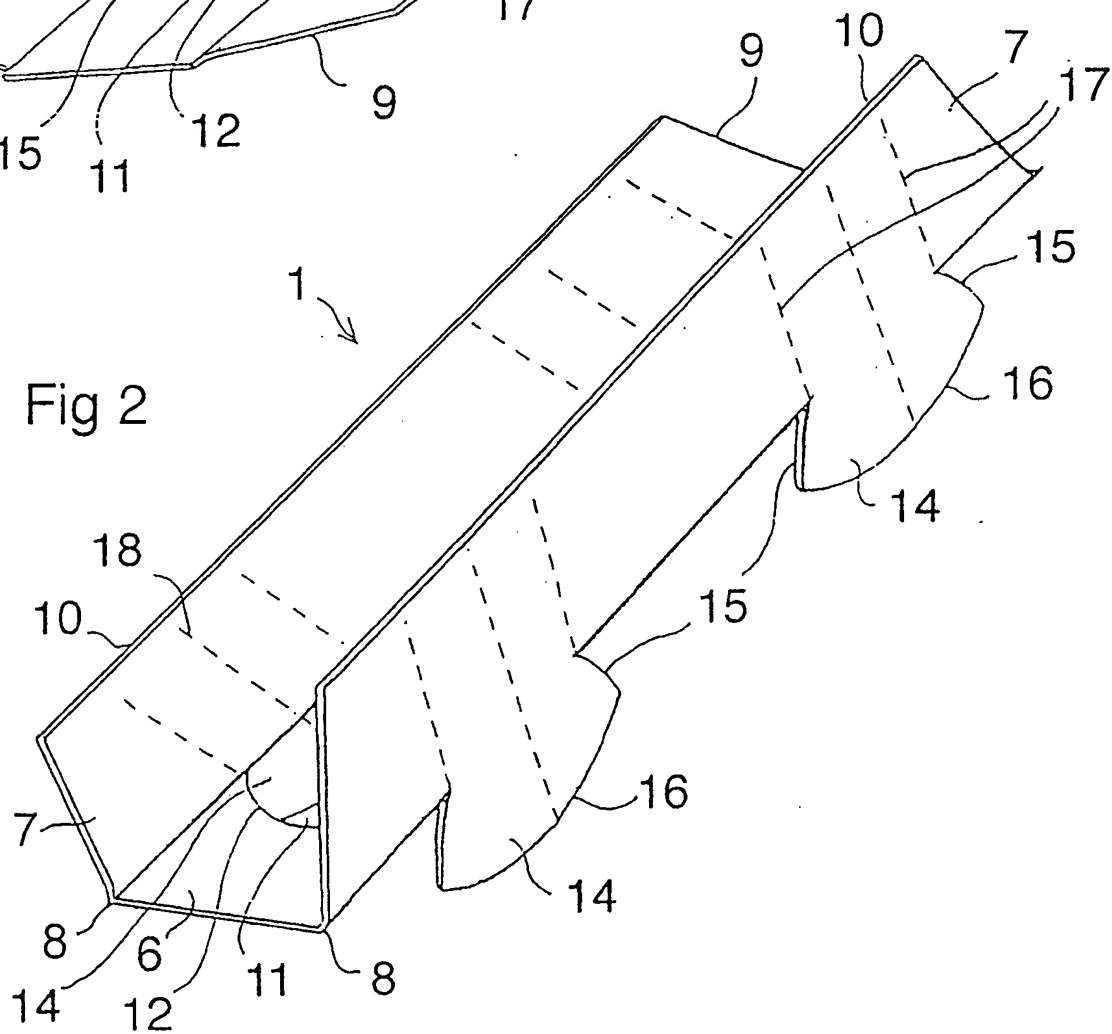
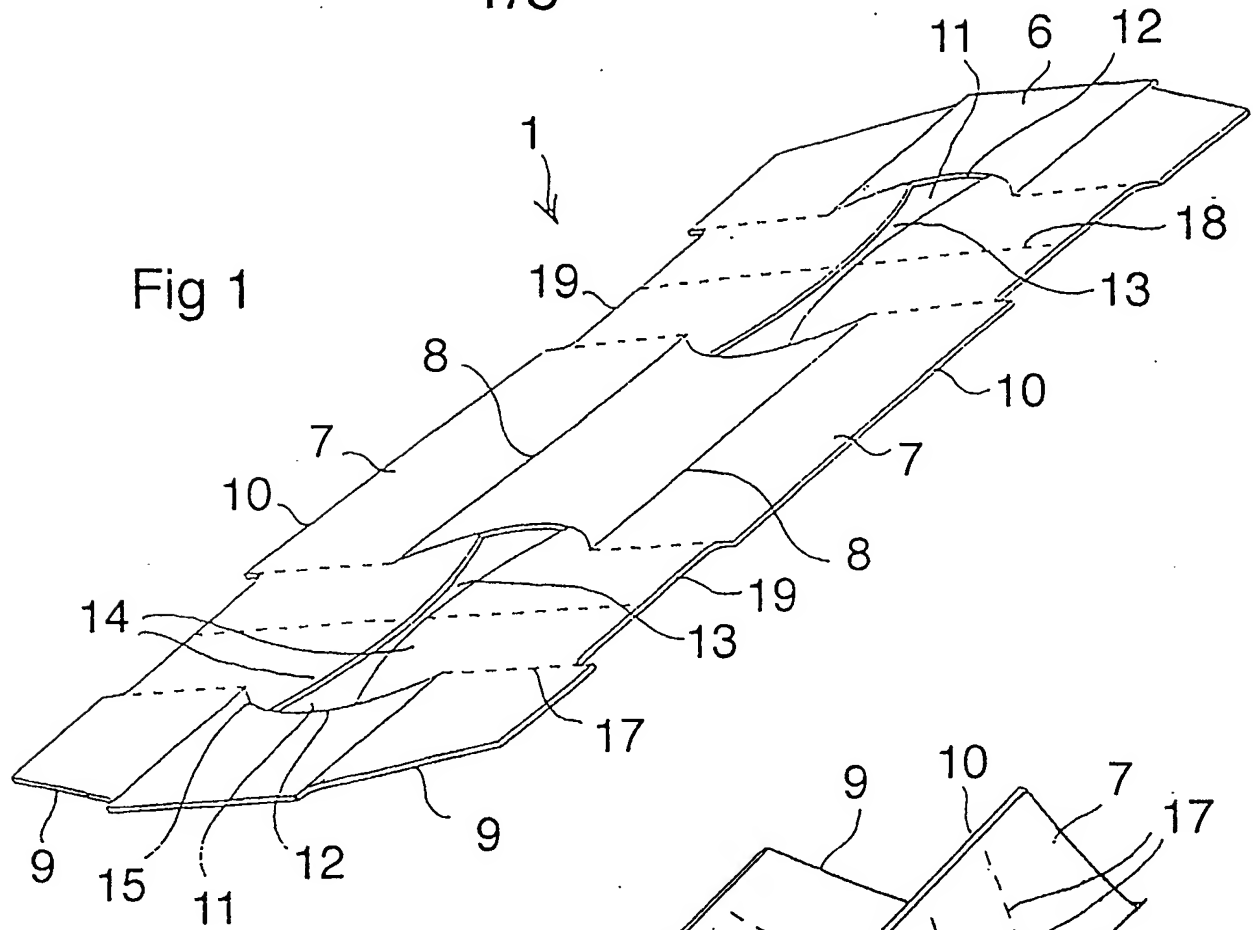
8. A device according to claim 7, c h a r a c t e r i z e d in that the device (28) comprises a lower mold (29), which suitably comprises a plurality of partial molds, each one of which is designed to receive a carrier blank, and wich comprises a substantially W-shaped body (30) with a central support (31), which has a hole (33) for a temporary holding of a guide pin (34) and supports (32), mounted at the ends, which have a hole (35) for a temporary holding of a knife (36), that all the supports are designed to support the central fields (6) of the carriers, and that they are laterally provided with support flanges (37) with the same length, which project somewhat above the supports, that the upper inner edges of the support flanges preferably are inwardly bevelled in order to facilitate a bringing along of the lateral fields around the support flanges, whereas the web between the supports suitably is provided with central, vertical bores in order to fasten the partial molds onto a mounting plate in the desired formation.

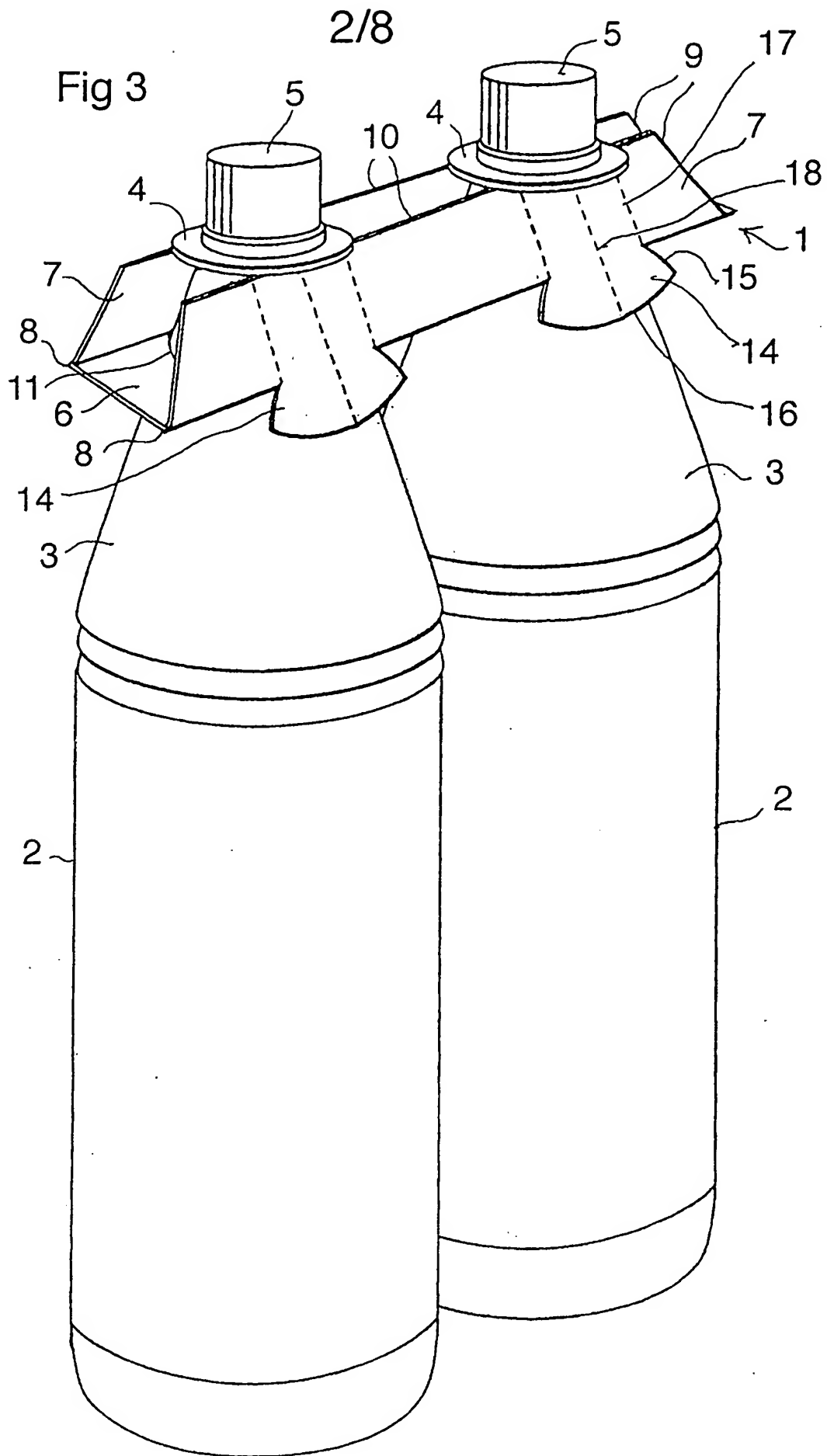
9. A device according to claim 8, c h a r a c t e r i z e d in that above said supports are mounted vertically upwardly and downwardly movable alternately disposed multiple function devices (38 and 39), the one of which (38) being designed to press, fold and grip, whereas the other one (39) is designed to press, possibly fold and separate, that all these devices suitably are suspended in tube-shaped shafts (40), which with a central section can be moved with a sliding fit through a lower base plate (41), disposed above the devices and the upper end of which is threaded into an upper base plate (43), that in the shafts above the same upwardly as well as downwardly moveable guide rods (42) are guided, the upper ends of which are provided with stop devices (46), between which and the upper base plate (43) the guide rods suitably are surrounded by a compression spring, by means of which the height position can be adjusted by the lower end of the guide rod and/or a soft braking can be done, when the devices are lowered, that the upper base plate (43) is connected to the lower one (41) via preferably pneumatic cylinders (44), which are guided by a control center, that said second device (39) is provided with, like said one device (39), at the lower ends of the guide rods e.g. through threading on, fastened press cushions (45), designed to be pressed against the

two portions of the central field, which are disposed at the ends thereof, that each cushion of said second device is provided with a transversally positioned knife (36) and is designed to at the same time influence two ends of the central field, which are adjacent to each other and belong to two carriers, the ends of which are adjacent each other.

10. A device according to claim 9, characterized in that the upper longitudinal edges of the cushions (45) are bevels (47), against which folding flaps (48) abut with their lower ends, which flaps are pivotally suspended at the lower end of the body (49) of the devices, the swinging axels (50) extending in the longitudinal direction of the carriers, that the lower inner longitudinal edges of the flaps abut preferably with a certain bevelling against the bevels (47) in order to guarantee the outwardly pivoting of the flaps, that the contact between the folding flaps and the press cushion is designed to be guaranteed by means of compression means, which act against each other, e.g. compression springs, that the body (49) above the press cushion (45) is provided with a contact surface (51) for the press cushion, that within the upper area of the body (49) grip claws (53) are suspended on both sides on swinging axels (52), which extend in the longitudinal direction of the carrier, which grip claws are spring-loaded to be pressed outwards with their lower, at least somewhat, towards each other bent ends, that inside the swinging axles (52) at the lowermost, roughly in the center of the body (seen in the vertical direction) disposed end of the tube shaft a central block (54) is disposed, which, when the shaft is lifted upwards to an upper end position, is designed to pivot the upper ends of the grip claws outwards and move the lower ends of the grip claws in a direction against each other and up to an abutment against the outer side of the folding flaps, and that the control block (54) within this upper lateral area is provided with downwardly and outwardly inclined bevels (55).

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Fig 4

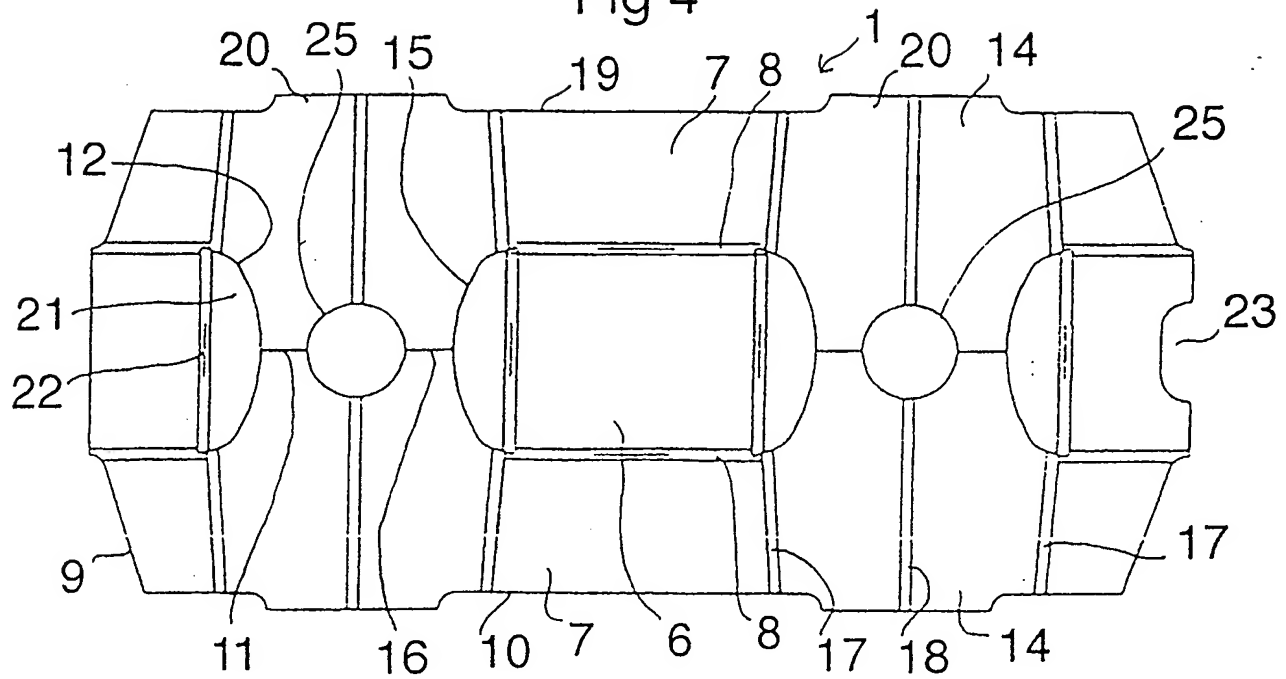
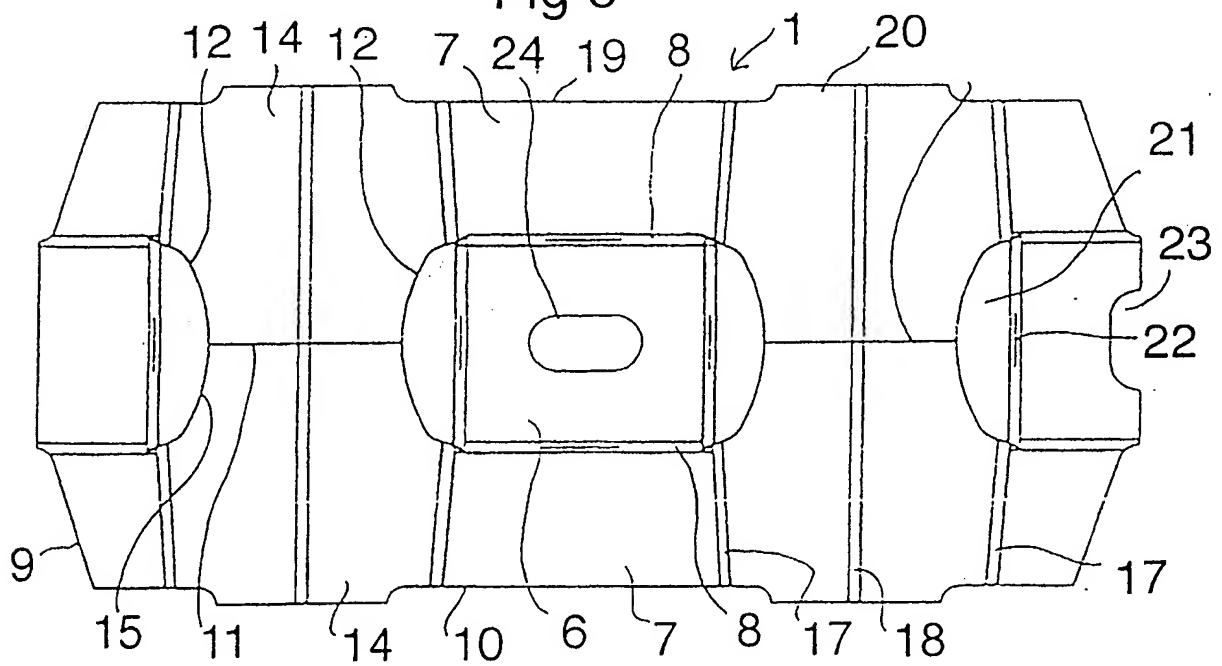


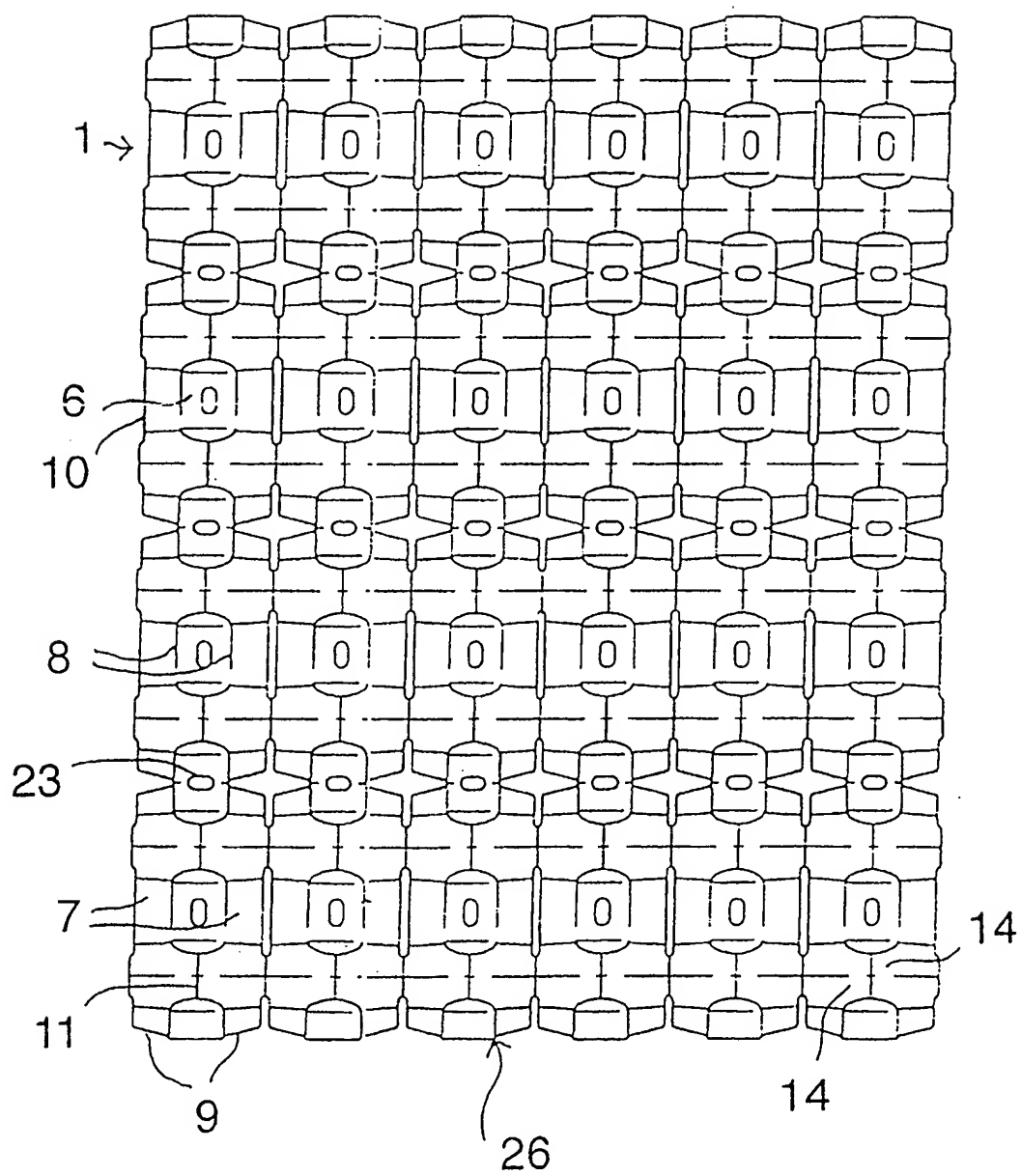
Fig 5





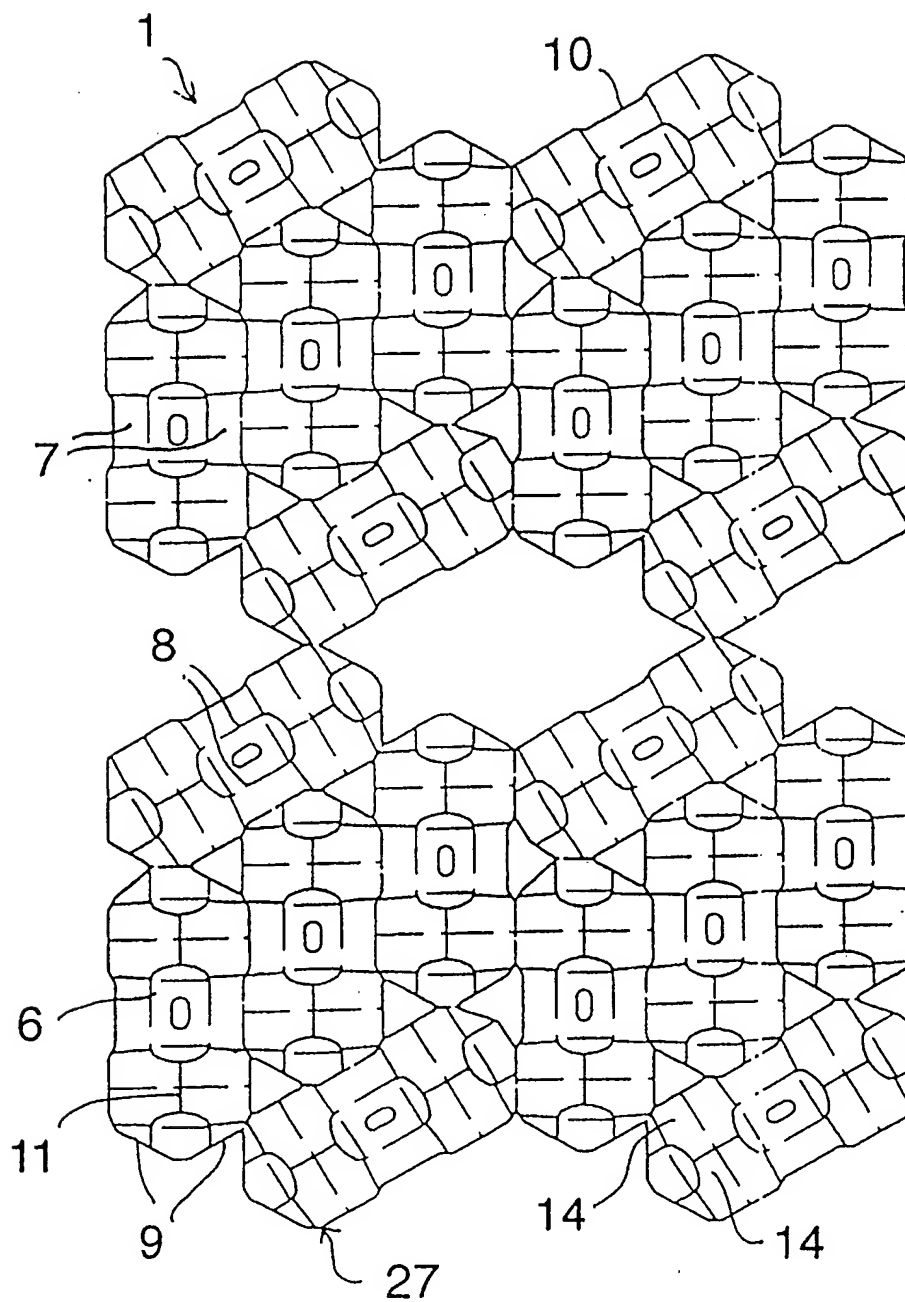
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Fig 6

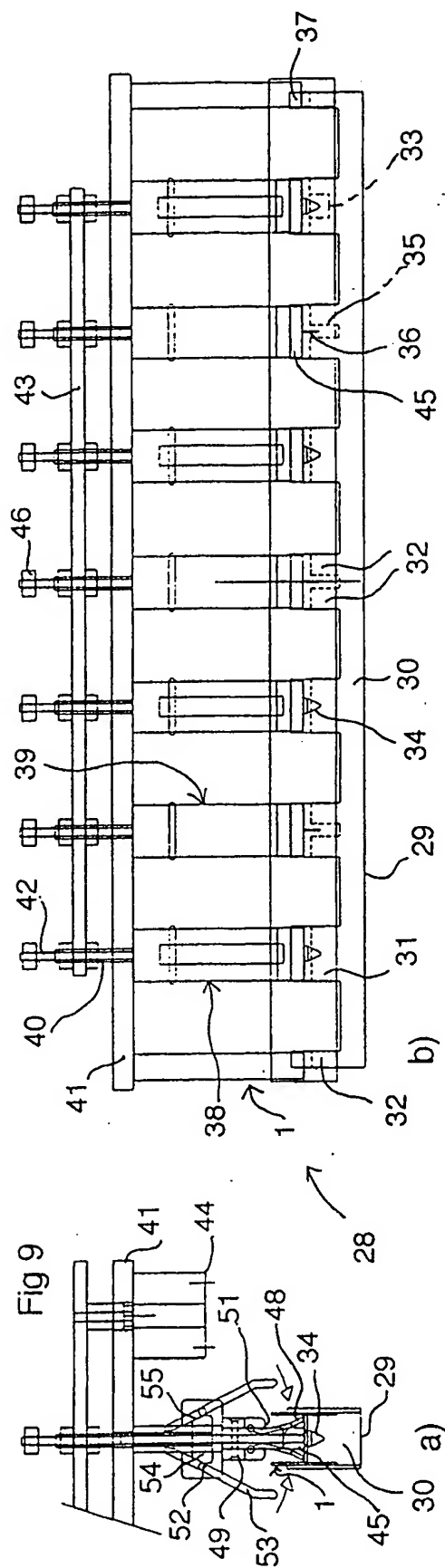
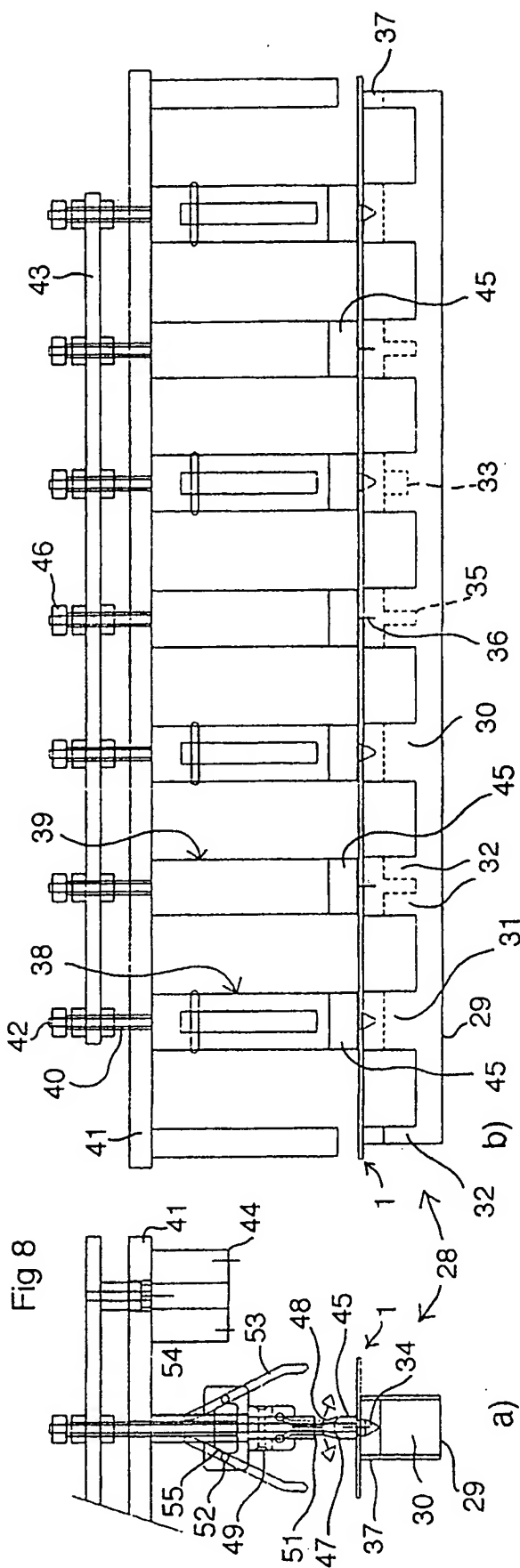


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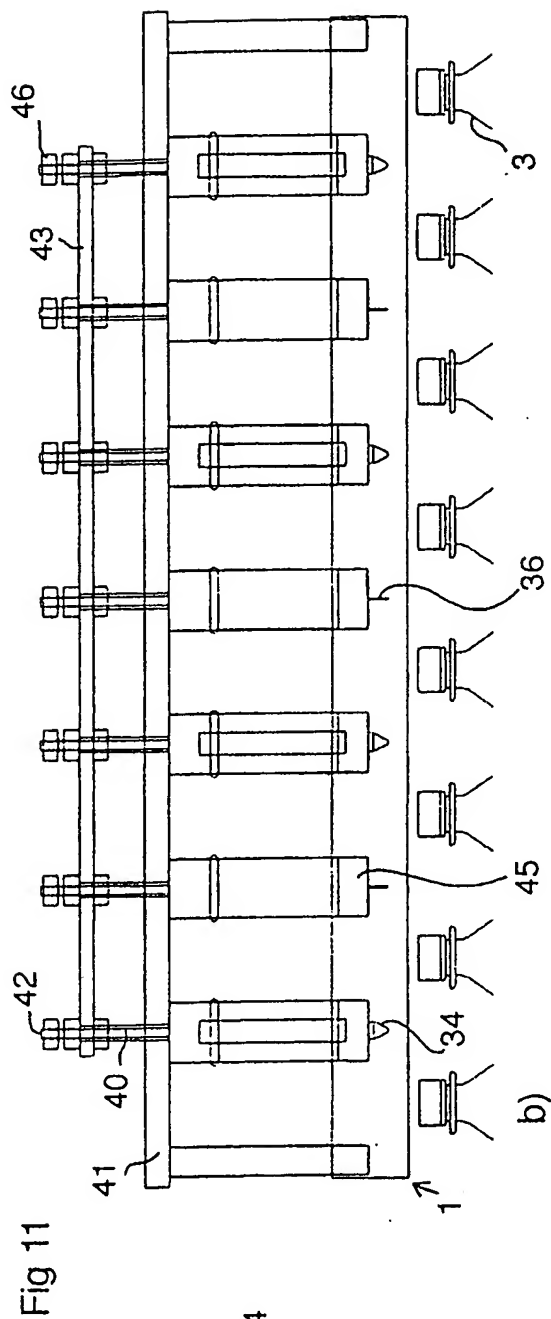
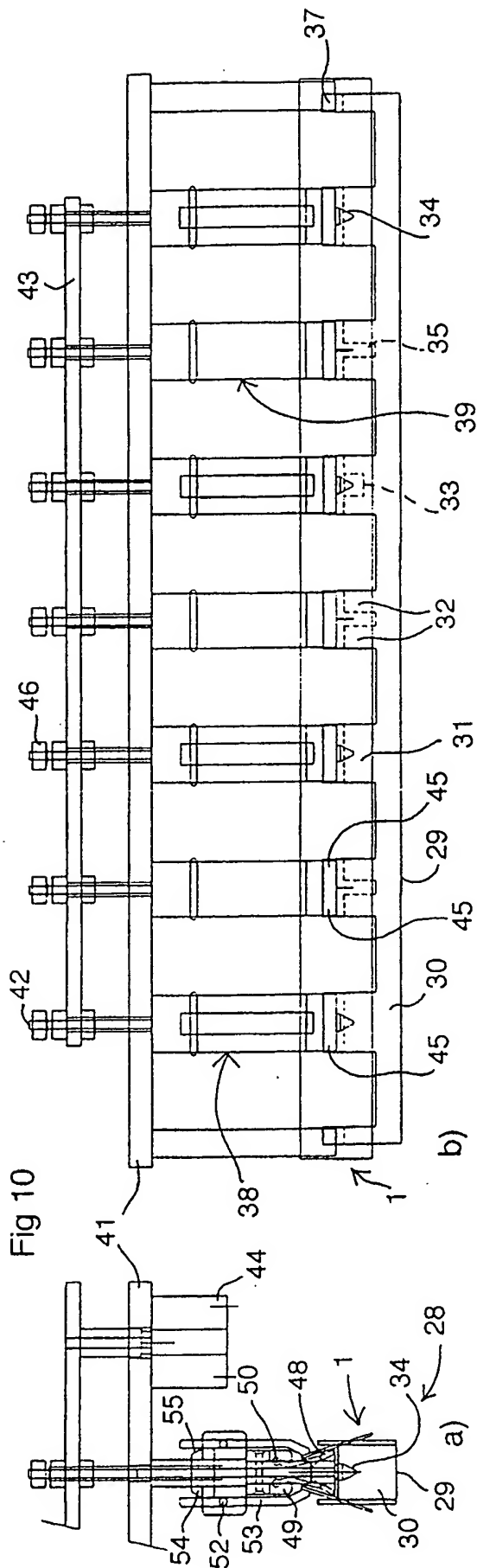
Fig 7



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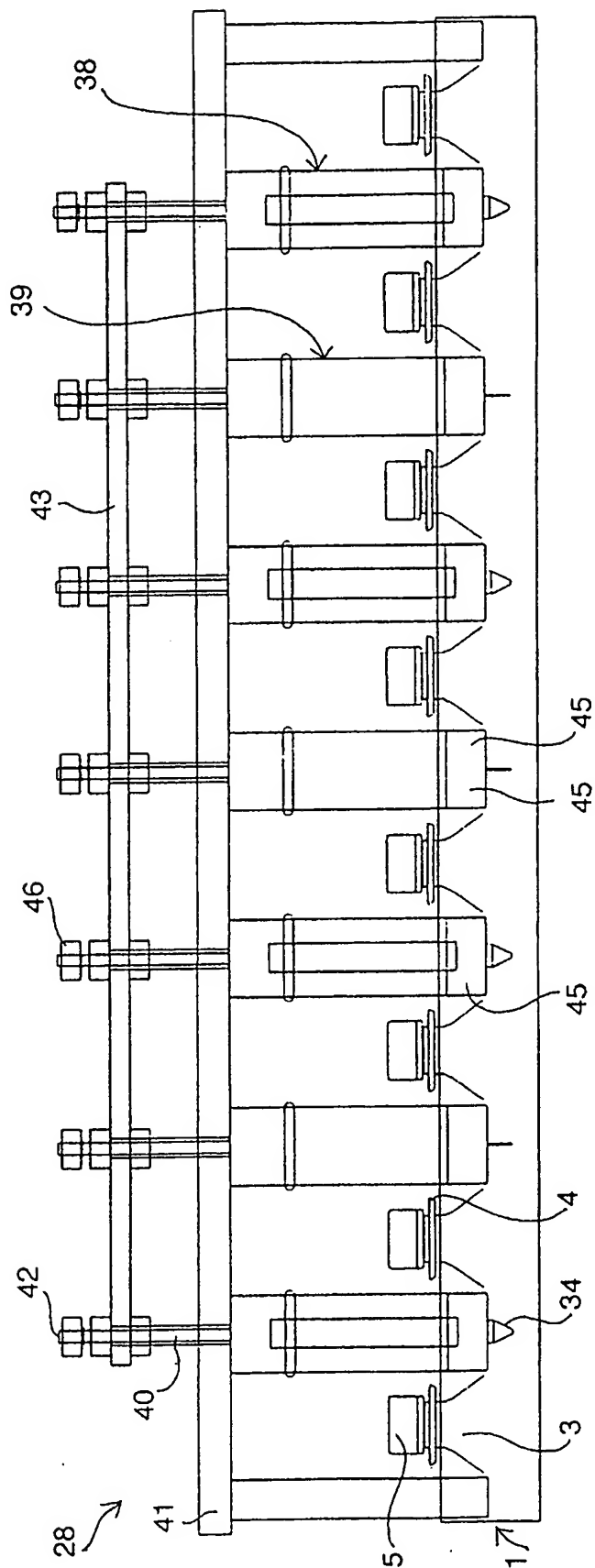


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Fig 12



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/01607

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65D 71/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2138409 A (SERRE JEAN-CLAUDE), 5 January 1973 (05.01.73), figure 3 --	1-10
A	EP 0317379 A1 (COMPAGNIE GERVAIS-DANONE), 24 May 1989 (24.05.89), figure 14, abstract --	1-10
A	FR 1552369 A (UNILEVER N.V.), 3 January 1969 (03.01.69), figure 2 --	1-10
A	EP 0271895 A1 (UNILEVER N.V.), 22 June 1988 (22.06.88), figure 3, abstract -- -----	1-10

☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

23 December 1998

Date of mailing of the international search report

12 -01- 1999

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Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Kerstin Brinkman

Telephone No. +46 8 782 25 00

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE 98/01607

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
FR	2138409	A	05/01/73	NONE	
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EP	0271895	A1	22/06/88	NONE	
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